

REMARKS

By this Amendment, Applicants have amended claims 1 and 5, and canceled claim 11 without prejudice or disclaimer of its subject matter. Accordingly, claims 1-6 and 8-10 are pending.

In the Office Action mailed October 7, 2008, the Examiner rejected claims 1-6 and 8-11 under 35 U.S.C. § 101 as being purportedly directed to non-statutory subject matter, and rejected claims 1-6 and 8-11 under 35 U.S.C. § 102(b) as being purportedly anticipated by *Borrel et al.*, “Deformation of n-dimensional objects.” Applicants respectfully traverse these rejections.

As a preliminary matter, Applicants thank Examiner Saif A. Alhija for his time and courtesy in granting an interview with Applicants’ representative on December 23, 2008. During the interview, Applicants’ representative presented arguments to overcome the 35 U.S.C. § 102(b) and the 35 U.S.C. § 101 rejections of claims 1-6 and 8-11. This Amendment includes claim amendments and arguments that were discussed during the interview.

Section 101 Rejection

Claims 1-6 and 8-11 stand rejected under 35 U.S.C. § 101 as being purportedly directed to non-statutory subject matter. The rejection of claim 11 is moot by virtue of the cancellation of this claim without prejudice or disclaimer of its subject matter. In this rejection, the Office Action alleged that the claims “do not produce a useful, concrete, and tangible result,” citing *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998.), 47 USPQ2d at 1601-02. Office Action, p. 4. Applicants respectfully disagree.

35 U.S.C. § 101 defines four categories of inventions that Congress deemed to be the appropriate subject matter of a patent: processes, machines, manufactures and compositions of matter. Claims 1-4 are directed toward a design shape generating apparatus, which includes an input device, a transformation processing device, and an auxiliary shape adding device. The claimed design shape generating apparatus falls within at least the “machine” category and is therefore patentable statutory subject matter. The Office Action has inappropriately applied the *State Street Bank* test, which is no longer valid according to the recent ruling of the Court of Appeals for the Federal Circuit in *Ex Parte Bilski*, Appeal No. 2007-1130 (Fed. Cir. October 30, 2008).

The Court ruled in *Ex Parte Bilski* that to be patentable under 35 U.S.C. § 101, a process must (1) be tied to a particular machine or apparatus; or (2) transform a particular article into a different state or thing. The design shape generating methods of claims 5-6 and 8-10 meet not only the second requirement, but also the first requirement. The claimed methods clearly transform a particular shape of an article into a different state or thing (i.e., a new shape). Furthermore, the claimed methods are tied to a particular machine or apparatus, for example, “an input device” and “a transformation processing device,” as recited in claim 5 and indirectly recited in dependent claims 6, 8, 9, and 10. The methods recited in claims 5-6 and 8-10, therefore, are patentable under 35 U.S.C. § 101 in view of the recent ruling of the Federal Circuit in *In re Bilski*.

Based on above arguments, Applicants submit that the subject matter claimed in claims 1-6 and 8-10 is statutory subject matter, and the Section 101 rejection is

inappropriate. Applicants respectfully request reconsideration of the claims, and withdrawal of the Section 101 rejection of claims 1-6 and 8-11.

Section 102 Rejection

Claims 1-6 and 8-11 stand rejected under 35 U.S.C. § 102(b) as being purportedly anticipated by *Borrel et al.*, "Deformation of n-dimensional objects." Applicants respectfully traverse this rejection. Applicants note that the rejection of claim 11 is moot by virtue of the cancellation of this claim without prejudice or disclaimer of its subject matter.

Borrel et al. discloses a mapping "technique for computing space deformations that interpolate a set of user-defined constraints." *Borrel et al.*, p. 351. The technique achieves deformation by a polynomial mapping from space \mathbf{R}^n to \mathbf{R}^n . The polynomial mapping involves two steps. First, it maps points from the \mathbf{R}^n space into a higher-dimensional space, the \mathbf{R}^m space, using a polynomial function f of \mathbf{R}^n . Then, it maps the points back from \mathbf{R}^m space to \mathbf{R}^n space with a linear projection. *Borrel et al.*, p. 351.

In order to establish anticipation under 35 U.S.C. § 102, the Office Action must show that each and every feature as set forth in the amended claim 1 is found, either expressly or inherently described, in *Borrel et al.* See MPEP § 2131. Although *Borrel et al.* discloses a shape transformation process, it does not disclose or suggest each and every feature of independent claims 1 and 5, incorporated by reference into the dependent claims 2-4, 6, and 8-10.

For example, claim 1 recites a transformation processing device configured to displace a node defining the shape of the shape elements and belonging only to the transformation region in accordance with the input transformation instruction vector

depending on the location of the node with respect to a bending line or a plurality of bending lines. Claim 1 recites, among other things, at least the following feature:

when the node is located on a single bending line of the article, the input device further receives an input of a predetermined angle, and when an angle formed by the transformation instruction vector and the bending line is less than the predetermined angle, the node is displaced in an extending direction of the bending line and by an amount corresponding to a component of the input transformation instruction vector in the extending direction of the bending line, and when the angle formed by the transformation instruction vector and the bending line is equal to or greater than the predetermined angle, the node is displaced in accordance with the transformation instruction vector.

Applicants submit that *Borrel et al.* fails to disclose, among other things, at least the above-quoted feature recited in claim 1. The Office Action stated that the above-quoted feature is “[i]nterpreted to be corner transformation,” and alleged that the above-quoted feature is disclosed by “[s]ection 3.5.1, B-Spline functions” of *Borrel et al.*. See Office Action, p. 10. Applicants respectfully disagree. Contrary to the Office Action’s allegation, section 3.5.1 of *Borrel et al.* does not disclose or suggest input of both a transformation instruction vector and a “predetermined angle.” Section 3.5.1. of *Borrel et al.* also does not disclose or suggest displacement of the node according to the comparison between the input “predetermined angle” and the “angle formed by the transformation instruction vector and the bending line,” as recited in claim 1. Specifically, section 3.5.1. or other sections of *Borrel et al.* do not disclose or suggest that “when an angle formed by the transformation instruction vector and the bending line is less than the predetermined angle, the node is displaced in an extending direction of the bending line and by an amount corresponding to a component of the input transformation instruction vector in the extending direction of the bending line, and when

the angle formed by the transformation instruction vector and the bending line is equal to or greater than the predetermined angle, the node is displaced in accordance with the transformation instruction vector," as recited in claim 1.

Accordingly, Applicants submit that amended independent claim 1 is not anticipated by *Borrel et al.*, and should be allowed. Claims 2-4 also should be allowed at least because of their dependence from claim 1. Claim 5 incorporates features similar to those discussed above with respect to claim 1. For at least the same reasons presented above, claim 5 is not anticipated by *Borrel et al.* and should be allowed. Claims 6 and 8-10 also should be allowed at least because of their dependence from claim 5. Applicants therefore respectfully request withdrawal of the Section 102 rejection of claims 1-6 and 8-10.

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration and allowance of all pending claims. Please grant any additional extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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